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called by the same names in animal physiology: additive effects; influence of load, temperature and intensity of stimulus; fatigue; staircase response (quite like that of muscle); tetanization; death spasm (it looks as though a means were here offered for determining when death of a tissue ensues); influence of gases on excitability; effect of intensity of stimulus, of fatigue and of temperature on latent period; effect of various conditions on velocity of transmitted impulse; positive and negative galvanometric and turgidity responses (each stimulus gives rise to both, but the weaker positive—erectile—response is quickly followed and masked by the stronger negative—"contractile"—one); polar effects, etc. Polar effects are very thoroughly investigated. "With feeble current the kathode excites at make and not at break. The anode excites at neither make nor break," etc. The variation of polar reaction under tissue modification, as with age, etc., is studied, with important results. In the later chapters of the book *Biophytum* and *Desmodium gyrans* are employed in studying multiple and automatic (autonomic) responses. The pulsations of *Desmodium* leaves are thoroughly investigated.

The first two sentences of the last paragraph of Bose's book sum up the general outcome of his studies as well as can be thus briefly done: "In surveying the response of living tissues we find that there is hardly any phenomenon of irritability observed in the animal which is not also found in the plant. The various manifestations of irritability in the plant have been shown to be identical with those in the animal."

B. E. LIVINGSTON

JOHNS HOPKINS UNIVERSITY

SOCIETIES AND ACADEMIES

ANNUAL CONVENTION OF THE UTAH ACADEMY OF SCIENCES

THE seventh annual convention of the Utah Academy of Sciences was held at Salt Lake City, December 26 and 27, 1913, in the chemistry lecture room of the University of Utah.

In all, three sessions were held—the first be-

ginning at 8 o'clock Friday evening, the second at 9:30 o'clock Saturday morning, and the closing session at 2 o'clock Saturday afternoon.

From the standpoint of business transacted, this convention of the academy will rank as one of the most important in its history. A committee was appointed to take steps toward the publication of a bi-monthly magazine under the auspices of the academy. Another committee was appointed to look after the entertainment of distinguished scientists who may be visiting in Salt Lake City, and to assist them should they desire to investigate features of the region of scientific interest in their especial lines.

Professor C. W. Porter, of the Utah Agricultural College, was elected to fellowship. Miss Florence Knox, Professor Christian D. Steiner, Professor Jakob Bolin, Professor Franklin O. Smith, Dr. Helen I. Mattill, all of the University of Utah; Dr. Fred W. Taylor and Mrs. Amelia R. Taylor, of Provo; Willard R. Harwood and N. W. Cummings, of Salt Lake City; Professor George R. Hill, Utah Agricultural College, Logan, and H. R. Hagan, Logan, were elected to membership.

The constitution was amended to provide for a permanent secretary-treasurer.

The following are the officers for the ensuing year:

President—Professor Marcus E. Jones, Salt Lake City.

First Vice-president—Dr. Harvey Fletcher, B. Y. U., Provo.

Second Vice-president—Dr. C. N. Jensen, B. Y. C., Logan.

Permanent Secretary-treasurer—A. O. Garrett, High School, Salt Lake City.

Councillors-at-large—Dr. A. A. Knowlton, U. U., Salt Lake City; Dr. Joseph Peterson, U. U., Salt Lake City, and Dr. F. L. West, U. A. C., Logan.

The following papers were read at the annual convention:

"The Question of Valency in Gaseous Ionization," by Dr. Harvey Fletcher, B. Y. U., Provo.

"Community Life among Insects" (the presidential address), by Dr. E. G. Titus, U. A. C., Logan.

"Some Metabolic Effects of Bathing in Great Salt Lake," by Dr. Helen I. and Dr. H. A. Mattill, U. U., Salt Lake City.

"Corn under Irrigation," by Dr. F. S. Harris, U. A. C., Logan.

"Practical Experiments with Root-borers," by

Professor M. Rich Porter, Weber Stake Academy, Ogden.

"Workable Phosphates of the Mississippian," by Professor William Peterson, U. A. C., Logan.

"How Far is Scientific Extension Practicable?" by Dr. E. G. Peterson, U. A. C., Logan.

"Some Features of the Recent International Congress of Geologists," by W. D. Neal, Salt Lake City.

"Outline of Mining and Smelting Conditions at Santa Fe, N. M.," by B. A. Berryman, San Pedro, N. M.

"The First Law of Irrigation Practise," by Dr. John A. Widdsoe, U. A. C. (Read by title.)

"Uranium and Vanadium Deposits in Utah," by Professor Marcus E. Jones, Salt Lake City.

A. O. GARRETT,
Secretary

NEW ORLEANS ACADEMY OF SCIENCE

THE regular monthly meeting of the Academy was held in the Richardson Memorial Building, Tulane University, on Tuesday, February 17, with Dr. Isadore Dyer, president, in the chair and a large number of fellows and members present. The president appointed a committee of two to draw up suitable resolutions upon the death of Dr. Alcee Fortier, who had been a fellow of the Academy for thirty years and for some time corresponding secretary. The first paper of the evening was read by Dr. Irving Hardesty, professor of anatomy, Tulane University.

A number of objections to the Helmholtz theory of hearing were cited and attention was called to the impossibility, anatomically, of the basilar membrane serving in the manner usually assumed for it. Then the tectorial membrane was shown to be coextensively with the organ of Corti, to occupy the logical position, extending with one edge free over the peripheral surface of the neuro-epithelium and nearer the scala vestibuli, and that it is far more adapted and capable of being the chief vibratory structure in hearing, its flexibility being much greater and its proportions varying far more than those of the basilar membrane. A telephone theory of hearing was applied to the tectorial membrane and a model was shown in which the three divisions of the auditory organ were represented and in which the tectorial membrane was simulated as nearly as possible, both as to position and varying proportions. Sounds of varying vibration frequently applied to this model

indicated (1) that the tectorial membrane does vibrate; (2) that sounds of low vibration frequency throw the entire membrane into vibration; (3) that sounds of high frequency throw only varying extents of the more slender, basal end of the membrane into vibration, such sound waves being so damped out before reaching the apical end of the cochlea as to be incapable of producing vibrations in the thicker, apical end of the membrane; (4) a certain small amount of resonance seems apparent in the tectorial membrane, but probably little more than is possessed by the diaphragm of the telephone.

The second paper was by Dr. R. B. Bean, also of the department of anatomy, Tulane University, on "The Cartilaginous Tip (Woolner-Darwin) and the Skin Tip of the Human Ear." The speaker explained that "Darwin's tubercle" in the adult represents the cartilaginous tip of the ear of the fetus, which turns forward during the late stages of fetal life. There is at the same time a folding over of the skin and a shrinking with the folding, which leaves lines in the skin over the upper outer part of the helix. These lines are present on all ears that have been observed so far. They converge ventrally, thus indicating where the skin tip has turned under the ventral edge of the helix. The lines are not always over "Darwin's tubercle" but are frequently superior to this cartilaginous point, which seems to indicate that the skin or cartilage has shifted in development. By means of these lines one is able to demonstrate that certain distorted ears, which look as if they had been injured by accident, are in reality normal. The majority of the ears of about 150 negroes preserved in formalin at Tulane University seem to be distorted, and until these lines were discovered they were considered abnormal, frost-bitten, scarred, or otherwise mutilated, but they appear to be normal because the lines of the skin are present in their proper position and relations. Observations upon thousands of negroes show that this condition of apparent distortion of the ear is characteristic of that people. The ear of the Negro may, therefore, be called a distorted or mutilated looking ear. It is smaller than the ear of the white people, and shows a greater extent of retrograde metamorphosis.

There was considerable discussion of both papers in which Dr. Mann, Dr. Clo, Dr. Dyer and others participated. The academy then adjourned.

R. S. COCKS,
Secretary